

REMARKS

Claims 1 and 2 have been examined, and have been rejected under 35 U.S.C. § 112, first paragraph, 35 U.S.C. § 112, second paragraph, and 35 U.S.C. § 103(a).

Preliminary Matters

The Examiner has not acknowledged the drawings filed on April 19, 2004. Accordingly, the Applicant respectfully requests the Examiner to indicate, in the next Office Action, whether the drawings are acceptable.

Also, Applicant has amended the specification to correct a minor error. In particular, the specification incorrectly referred to the valve seat as element “24a”, while the figures depict the feature as element “21a”. Accordingly, the specification has been amended to match the figures. Applicant submits that such changes do not comprise new matter.

Rejections under 35 U.S.C. § 112, first paragraph

The Examiner has rejected claims 1 and 2 under 35 U.S.C. § 112, first paragraph, as allegedly not complying with the enablement requirement.

In particular, the Examiner maintains that the specification does not appear to disclose that the valve element actually contacts the orifices of the plate, as recited in claim 1. Accordingly, Applicant has amended claim 1 to conform to the language provided in the specification, and respectfully requests the Examiner to withdraw the rejection.

In addition, the Examiner maintains that the claimed “predetermined width and predetermined depth” is not specifically described in the specification to enable one skilled in the

art to determine specific values. However, as disclosed in the non-limiting embodiments of pg. 11, the width is made larger than the axial length of the magnetic characteristic change portion, and the depth is arranged so that a decrease in electromagnetic force due to the reduction in magnetic flux caused by the provision of the recess does not bring about any trouble when the fuel injection valve is put into practical use. Applicant submits that such disclosure is described in such a way to enable one skilled in the art to make and/or use the invention.

Rejections under 35 U.S.C. § 112, second paragraph

The Examiner has rejected claims 1 and 2 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Accordingly, Applicant has amended claim 1 in a manner believed to overcome the rejection.

Rejections under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1 and 2 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,032,879 to Hamada et al. ("Hamada") in view of U.S. Patent No. 4,007,880 to Hans et al. ("Hans") and U.S. Patent No. 5,190,221 to Reiter ("Reiter").

A. Claim 1

Applicant submits that claim 1 is patentable over the cited references. For example, claim 1 recites that a moving iron core is provided with a radial recess of a predetermined width and a predetermined depth on the outer circumference of the moving iron core. The radial recess

is provided at a position facing a magnetic characteristic change portion produced in the yoke due to heat generated when the sleeve and the yoke are welded together.

On pg. 3 of the Office Action, the Examiner maintains that the Hamada reference discloses the claimed radial recess at gap G3 (Figs. 1B and 2). However, the gap G3 is not at a position facing a magnetic characteristic change portion, as recited in claim 1. Rather, as shown in Fig. 2, a projection portion 3A projecting from the yoke 3 is provided, on which the magnetic flux concentrates. Moreover, a sleeve is provided adjacent to an inner circumference projection portions, such that most of the magnetic flux passes through the magnetic characteristic change portion in a thrust (axial) direction. An angled projection portion is also shown in Fig. 1B.

On the other hand, as disclosed in the non-limiting embodiments of the present Application, by providing a radial recess on the outer circumference of the moving iron core at a position facing the magnetic characteristic change portion, magnetic flux lines passing through the moving iron core are detoured and flow through the underside of the recess (i.e., on a side where the stationary core is not disposed) (pg. 5, lines 11-19). This is beneficial in that it prevents the influence of the variation in magnetic characteristics and it is possible to suppress the variation in injection quantity characteristic of the products caused by the magnetic characteristic change portion due to the heat generated at the time of welding the sleeve and the yoke together (Pg. 5, lines 20-26).

In view of the above, Applicant submits that the invention of Hamada fails to teach or suggest the claimed fuel injection valve. Further, since Hans and Reiter fail to cure the deficient

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teachings of Hamada, as set forth above, Applicant submits that claim 1 is patentable over the cited references.

B. Claim 2

Since claim 2 is dependent upon claim 1, Applicant submits that such claim is patentable at least by virtue of its dependency.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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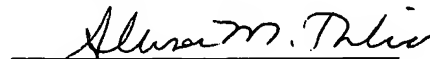
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